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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/269,118	06/30/94	INOUYE	S 377.5888P

EXAMINER	
HENDRICKS, K	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

1 - File Copy

Office Action Summary

Application No.	Applicant(s)
08/269,118	Inouye et al.
Examiner	**Group Art Unit**
Keith D. Hendricks	1814

☒ Responsive to communication(s) filed on *Nov 2, 1995*.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-10* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-10* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Part III DETAILED ACTION

Election/Restriction

Applicant's election with traverse of species (genus) Escherichia in Paper No. 10 is acknowledged. The traversal is on the ground(s) that each RT, although from separate and distinct genus and species of microorganisms, have the same utility and are "structurally related".

This is not found persuasive because of the reasons of record. The RT's from each bacterial source, "specifically" listed in claim 10, but broadly claimed in all other claims, are not even limited to a single genus of organism, or to any particular species within the 10 different genus'. Thus, the potential exists for actually thousands of different RT's to be encompassed by the claims, and hundreds encompassed by a single election of a particular genus. Also, there is no showing that each and every RT encompassed by applicants' broad scope of inventions are "structurally related", and to what degree if indeed they are. Collectively, this provides an extreme undue burden for the Examiner to undertake. A restriction is, of course, never a requirement of the Examiner, but in this case, is certainly needed.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

Claims 1-10 are rejected under 35 U.S.C. § 112, first paragraph, as the disclosure is enabling only for claims limited to a reverse transcriptase (RT) from Escherichia coli, which RT synthesizes msDNA. See M.P.E.P. §§ 706.03(n) and 706.03(z).

The enablement of the specification, as far as one skilled in the art obtaining a particular single RT enzyme, is described above. The specification in no way enables one skilled in the art to produce a RT enzyme which is broadly encompassed by the instant claims. The election of species resulted in the election of a single genus of microorganism, namely Escherichia. The claims are not even limited to a single species or subset of microorganism under this broad genera. There are many more species of Escherichia other than the exemplified and enabled E. coli, namely E. blattae, E. vulneris, E. hermannii and E. fergusonii to name a few. Many of these individual "species" each have several strains and sub-species within

their particular groups. Thus, the breadth of the elected invention alone is staggering.

The specification does not provide sufficient guidance, motivation or expectation of success (predictability) toward the isolation of another RT from another Escherichia source other than E. coli. To support this statement, it is important assess the teachings of applicants' specification. It is noted that at page 36 of the instant specification, applicants state that "by using one of the two screening tests identified above, one skilled in the art will readily determine whether any one of these bacteria contain retrons synthesizing msDNA." Applicants have not isolated these RT's. They have not even demonstrated that other RTs encompassed by the claims exist. At best, the specification has shown that there is a screening test to attempt to determine if an "retron synthesizing msDNA" exists, presumably containing an RT. Once this retron is determined to exist, it must be identified and screened. Then any resultant RT must be produced and identified. The result is one skilled in the art is left to do the experimenting, screening, and further experimenting on their own, finally determining if such an RT exists, and then attempting to isolate such an RT after this. This simply does not provide one skilled in the art with sufficient enablement beyond the scope of that indicated within the specification. There is no guidance or (reasonable) predictability that would lead one skilled in the art to an RT other than that specifically exemplified in the specification. Thus, the specification is viewed as non-enabling considering the breadth of the claims, the amount of experimentation unduly necessary, the scarcity of guidance and/or working examples, and the unpredictable nature of the art.

Applicants have taken a select few RTs from E. coli and/or M. xanthus, to which they hold patents to both, and compared certain areas of sequences within these RTs. This is reported in Figure 14. It is important, however, to bear in mind the difference between an invention and a discovery. Applicants, as their invention, have enabled (and received patents to) the actual RTs from these two microorganisms. They have also "discovered" certain areas of sequence similarity within these two types of RTs, and attempted to broadly claim these as well. The specification, however, does not enable one skilled in the art to attempt to locate an RT, from any

bacterial source (elected Escherichia genus), that "comprises a conserved sequence of amino acid residues" shown in the claims. Claim 1 lists only 4 amino acids by which one skilled in the art is to attempt to locate and identify a particular, actual RT from. And one of the listed residues is actually a choice of two amino acids, thus actually not even limited to one sequence of four amino acids. One skilled in the art would have no way possible to attempt to screen, experiment, locate and isolate/purify such an enzyme with so little specific information regarding its characterization, as encompassed by the claims. The specification does not outline how one skilled in the art is to start with the information in the claim, in light of every bit of information in the specification, and locate a bacterial RT with merely a "conserved sequence" of four amino acids. The subsequent listing of short amino acid sequences (3 to four each, with several choices at several positions, drastically increasing the possibilities) in claims 2-4, and the recitations in claims 5-7 do little to solve or limit this issue.

Further, the recitation that the RT "comprises" a conserved sequence as shown, does not demonstrate to one skilled in the art where this short sequence might be located, or expected to be located. Also, with the recitations of claims 1-4 collectively, the RT is to somehow, somewhere and at 4 individual positions within the enzyme, contain the four "conserved sequences". The claims do not specify if they are to be in order, from claim 1 to claim 4, if they are random or if they are interchangeable, etc. It would require an undue amount of experimentation for one skilled in the art to attempt to determine where such a conserved sequence would be located within a potential RT. There is no guidance provided to lead one in the art to such a conclusion such that it would greatly enhance the chances of producing an RT according to applicants' invention. The working examples do not provide answers to this dilemma. Finally, the specification does not provide a reasonable assurance or predictability that one skilled in the art would expect to find the listed conserved sequence(s) at a repeatable and consistent location within the enzymes encompassed by the broad language of the claims.

Claim 8 is not commensurate in scope with the enablement of the specification. Again, keeping in mind the scope of the elected invention (Escherichia), the specification enables the isolation/purification of an RT

from Escherichia coli. The specification does not enable one skilled in the art to produce an RT that "comprises a sequence of amino acid residues", from any of the amino acids found in Figure 14. "A sequence of amino acid residues" encompasses any from 2-3 short fragments from Figure 14 to a whole sequence, or many portions of any of the sequences together. It would be extremely difficult and unpredictable for one skilled in the art to be able to utilize the information provided by Figure 14 and attempt to locate such a polymerase from any known Escherichia species. There is no guidance in the specification as to which portions of these sequences would be enough to identify if the sequence was encompassed by applicants' invention, as some short amino acid sequences appear in many different proteins that may or may not share common characteristics, or even be RT enzymes. The limited working examples provided demonstrate the isolation of the RT enzymes, and do not demonstrate the significance or potential utilization of the sequence information provided in Figure 14 toward isolating such an enzyme by one skilled in the art.

Claims 9-11 are not commensurate in scope with the enablement of the specification for the reasons set forth in the first three paragraphs of the 112, 1st paragraph rejection (spanning pages 2-3 of this action). The use of a screening test does not serve to enable one skilled in the art to locate, produce and utilize the invention. It is a description of a means for one in the art to test the activity of an RT enzyme once it is found, not a means to help enable one skilled in the art to produce the invention. This test is descriptive of the nature of RT's in general: they are "capable of synthesizing msDNA". Thus, it does not serve to limit nor describe in such terms as to enable its production the RT enzyme of the instant invention.

Claims 1-8 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The current recitation of the "conserved sequence" in the claims is indefinite and confusing. Initially, claim 1, as an example of claims 1-4, recites "a conserved sequence of amino acid residues as follows". This does not appear the same as "the conserved sequence... as follows". In other words, this does not necessarily dictate that these amino acids listed must

be in that order consecutively; they merely must be in a "sequence". Next, it is unclear as to where in the RT these sequences might be found. Finally, it is unclear as to how these sequences are to be "conserved". What are they conserved in? Which sequences? Is this a consensus sequence taken from some long list of other sequences? Also, there is no recited reference figure or sequence to which this "conserved sequence" refers.

Claims 5-6 are indefinite for the recitation of "common subdomains...", and "Table 5". Initially, reference to Tables in the claims is improper. Claims should not refer back to portions of the specification; instead claims should refer to figures or SEQ ID #'s. The specification does not contain a Table 5 (or any other table), and thus reference to this or any "subdomain" shown in this Table is improper (Applicants are herein advised to be aware of addition or deletion of material and the rules of New Matter).

Claim 7, which depends from claim 6 and ultimately claim 1, states that "a total of 61 conserved" residues should be found in the RT. Claim 1, however, recites that the RT only has 4 conserved sequences, and thus claim 7 is an improper limitation, as it is outside the boundaries of the claim from which it depends. Further, since there is no subdomains provided, or a Table 5, it is unclear as to how all 61 residues are to occur within this subdomain recited in claim 6.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

The non-statutory double patenting rejection, whether of the obvious-type or non-obvious-type, is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent. *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Van Ornam*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); and *In re Goodman*, 29 USPQ2d 2010 (Fed. Cir. 1993).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321 (b) and (c) may be used to overcome an actual or provisional rejection based on a non-statutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.78 (d).

Effective January 1, 1994, a registered attorney or agent of record may sign a Terminal Disclaimer. A Terminal Disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-10 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-2 of U.S. Patent No. 5,320,958, and claims 1-7 of US Patent 5,434,070. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are directed to a bacterial RT (elected) from Escherichia. The patented claims are both directed to a bacterial RT from Escherichia coli. Thus, the subject matter of the claims overlaps and would have been obvious to produce from the teachings of the patents.

Claims 1-10 are rejected under 35 U.S.C. § 103 as being unpatentable over Inouye et al., US Patents 5,320,958 and 5,434,070.

Both patents disclose an isolated/purified bacterial reverse transcriptase from Escherichia coli. The instant claims encompass such an RT from E. coli. The recitation of the instant claims, regarding conserved sequences and the screening methods to determine their activity are considered an inherent characteristic of the enzyme, already part of the enzyme of the prior art and not essential to, or patentably different from, the claimed invention. Thus, the claimed invention is viewed as an obvious extension and description over the prior art of record.

NO CLAIM IS ALLOWED.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keith Hendricks whose telephone number is (703)308-2959.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, whose phone number is (703)308-0196.

KEITH D. HENDRICKS
PATENT EXAMINER
GROUP 1800

kdh
March 1, 1996